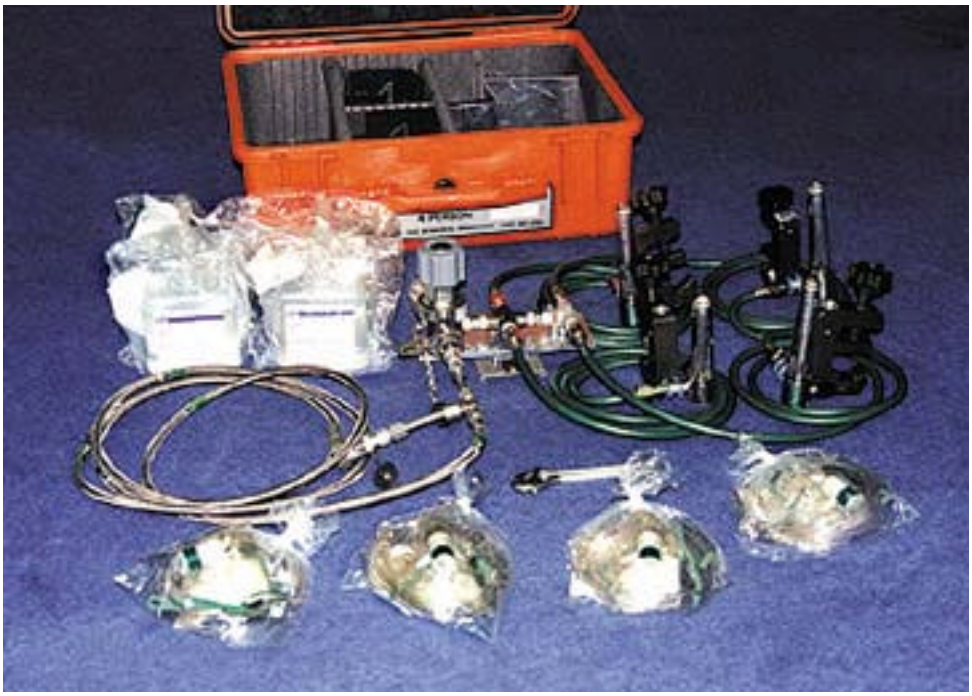
NASA Success Story

Medevac Oxygen System (MOS)



The Medevac Oxygen System (MOS), developed by NASA's Kennedy Space Center Biomedical Office, will soon be an emergency tool of the U.S. Air Force Air Mobility Command, thanks to an intergovernmental technology transfer initiated by the KSC Technology Programs and Commercialization Office (YA-C1). Lew Parrish, KSC's Technology Counselor, started working on this transfer in September 1998 after receiving an inquiry from the 86th Aeromedical Evacuation Squadron, Ramstein Air Base, Germany, regarding the MOS technology. The MOS, currently used on USAF C-130 aircraft, sounded similar to the Therapeutic Oxygen Manifold System (TOMS) currently used on USAF C-141 aeromedical evacuation missions. Parrish was told the supplier of the TOMS units had gone out of business, thus making the purchase of new TOMS units or replacement parts impossible. Seeing a potential need for the MOS, Parrish initiated a lengthy chain of contacts within the Air Force that eventually led to the right person, Master Sergeant David C. Hudson, Manager of Aeromedical Equipment Research and Acquisition in the Office of the Command Surgeon at Headquarters Air Mobility Command, Scott AFB, IL. Parrish worked closely with Barry Slack, the NASA/KSC innovator of this system, to obtain one of the MOS kits, along with all documentation needed to successfully transfer the system to the Air Force. Hudson visited KSC to see the system and meet the innovator. Hudson was pleased with the kit, and advised it should indeed solve the problems the Air Force is having with the TOMS. He formally requested a transfer of the technology to the Air Force.

Point of Contact
MSgt David C. Hudson
U.S. Air Force
HQ AMC/SGXPA
203 W. Losey St., Suite 1180
Scott Air Force Base, IL 62225-5219

Phone: (618) 256-7083
Fax:

david.hudson@scott.af.mil

Prepared by Dynacs, Inc.
Success Story ID # 2045

August 2000

NASA Success Story

Medevac Oxygen System (MOS) (Continued)

NASA Involvement The Medevac Oxygen System was designed to provide a therapeutic oxygen supply to patients being flown aboard the C-130 aircraft during a long haul medevac scenario. These systems are currently deployed at the Space Shuttle Transatlantic Abort Landing sites aboard U.S. military aircraft. Barry Slack, a member of the NASA Biomedical Engineering Office at KSC, designed the MOS after an inspection was conducted of the Space Shuttle Transatlantic Landing (TAL) site medical resources. Not all of the USAF C-130 astronaut medevac planes had the capacity to handle more than three patients. Shuttle crews are normally larger. Slack decided a new system was needed, and after research, along with expert advice from Patrick Air Force Base, Florida pararescuemen, the newly-designed MOS was born. Each MOS can supply up to four patients and systems can be joined sequentially (daisy chained). The C-130 provides a source of gaseous oxygen at approximately 400 pounds per square inch (psi) from its onboard liquid oxygen supply. The pressure of the gaseous oxygen is reduced by a regulator to 50 psi for distribution to each patient station. A flow controller and humidifier are provided at each station. The assembly can be attached to the litter or other patient carrying device. The output from the humidifier connects to a non-rebreathing mask. The entire system is packed and stored in a durable, plastic, waterproof case divided and padded to prevent damage during storage and transport.

Social/Economic Benefit Although originally designed to meet requirements of the Space Shuttle Program, this Medevac Oxygen System can meet needs for patient oxygen delivery on a variety of airborne and surface platforms. A supply of gaseous oxygen at greater than 100 psi is required. On this system, a standard litter stanchion attachment fitting is used to secure the regulator, but other methods could be easily fitted. The most common application may be the Hercules C-130 aircraft, which is found in the inventory of 64 countries world wide. Use aboard combat transport aircraft such as the C-141 and C-5 aircraft, as well as various helicopters, is envisioned. Use aboard the C-130 aircraft, especially the new C-130 J and X models that will be incorporating a new liquid oxygen system capable of supporting 25 litter patients, is also planned. The Air Force also intends to brief both the U.S. Coast Guard and the U.S. Navy on the MOS system for incorporation of the technology in their aircraft.

Industry Partner
U.S. Air Force

NASA Partner
Kennedy Space Center

Point of Contact
MSgt David C. Hudson
U.S. Air Force
HQ AMC/SGXPA
203 W. Losey St., Suite 1180
Scott Air Force Base, IL 62225-5219

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